

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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20. Feb. 2006

TBK PATENT

PCT

WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY
EXAMINING AUTHORITY

(PCT Rule 66)

Date of mailing
(day/month/year)

16.02.2006

Applicant's or agent's file reference

WO 46098

REPLY DUE within 0 month(s) and 15 days
from the above date of mailing

International application No.

PCT/JP2004/018870

International filing date (day/month/year)

10.12.2004

Priority date (day/month/year)

17.12.2003

International Patent Classification (IPC) or both national classification and IPC

C22C9/00, C22C9/06

Applicant

TOYOTA JIDOSHA KABUSHIKI KAISHA et al.

1. ☒ The written opinion established by the International Searching Authority:
☒ is ☐ is not
considered to be a written opinion of the International Preliminary Examining Authority
2. This second report contains indications relating to the following items:
 - ☒ Box No. I Basis of the opinion
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☐ Box No. VIII Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6. For an additional opportunity to submit amendments, see Rule 66.4.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: 17.04.2006

Name and mailing address of the international preliminary examining authority:



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**WRITTEN OPINION OF THE INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY**

International application No.
PCT/JP2004/018870

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this opinion is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed")*:

Description, Pages

1-49 as originally filed

Claims, Numbers

1-9 received on 12.10.2005 with letter of 12.10.2005

Drawings, Sheets

1/5-5/5 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

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**WRITTEN OPINION OF THE INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY**

International application No.
PCT/JP2004/018870

Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations:

see separate sheet

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1. Inventive step

1.1 As a general matter it is to be noted that the application (see par. 19,20,30,36-38), D1 (see p. 2; l. 25-35; p. 5, l. 36-44; par. bridging pages 5-6) and D2 (see par. 32, 37) are related to a high wear resistance in the copper alloys to be cladded on sliding members. The formation of high melting point composite compounds (i.e. silicides) ensures the prevention of wear during sliding operation at high temperature, the so-called lubricity or self-lubricity.

1.2 D2 discloses a high temperature wear-resistant copper alloy with crack resistance and machinability for use in weld bead layer (cladding) on sliding members (see abstract, par. 1, tables). The alloys are obtained in powder form and then welded as to provide the wear resistant sliding layer (par. 48, 49, fig. 1). Present application attempts the same objectives as D2 (see par.1,7,39-42, fig. 1).

The only difference between claim 1 and D2 consists in the use of one or more elements from the group of Ta, Ti, Zr and Hf as a hard particles formers (see Table I in first communication). D2 mentions the presence of Mo, W and V as hard particles formers (i.e. silicide, generally Fe-mixed silicides, see par. 37) in presence of lower Co content and thus improving wear and lubricity at high temperatures.

No effect can be seen in substituting Mo,W, V with Ta, Ti, Zr, Hf since in both cases similar effects are obtained (see descr. par. 32). Accordingly, the problem to be solved is merely to provide an alternative wear resistant material.

In view of such a problem the substitution of the silicide formers of D2 with alternative silicides formers would be considered without the need of an inventive activity in sense of Art. 33(3) PCT.

D1 discloses also a wear resistant copper alloy with enhanced cracking resistance (see abstract). The skilled person would use the teaching concerning the addition of at least one elements from the group of Mo, Ti, Zr, Nb and V (see par. bridging page 5 and 6) as to obtain wear resistance at high temperature by the high melting point composite compounds without any inventive activity in sense of Art. 33(3) PCT. It is a matter of usual experimental trials to replace the use of Mo and/or V in D2 with Ti and/or Zr since they are taught to belong to the same group of hard particles former

in particular in combination with Si in D1 (see p.5, l. 36-42, p. 5, l. 57- p. 6, l. 10).

- 1.3 The arguments of the Applicant that D1 is not to be taken into account by the skilled person are not followed. D1 is directed to a very similar wear resistant Cu alloy. A certain lower limit for Co cannot be established for 2% since in both D1 and D2 Co is replaceable with Fe and/or Ni due to its high cost. Moreover, such a slight difference of 0.03% between the lower and higher limits defined in claim 1 and D1 is within the error range of usual analysis devices and an inventive step cannot be assessed on this basis.

The argument relating to the improved crack resistance provided by Ta cannot be followed since claim 1 is not limited to Ta.

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